The Reaction Times

“read all about it!”

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(Data collected by Bryn Young and Andrew ovens)

Reaction time is a very interesting topic showing how quickly someone can react to a certain sound or movement. Many people want to find out the difference in reaction times between girls and boys because there is a prejudice between them, saying that boys are better at physical activities like sport, and this means they must have a faster reaction time. There is no way of actually telling if boys have a quicker reaction time because most girls have been brought up to be not very sporty or focused on physical activities, and so have less interest or need for having a quick reaction time. On the other hand, boys have been traditionally brought up to be interested and obsessed with physical activities like sport, and conditioned into becomingthe best physical competitors possible. This could lead to:

1) girls being seen as having slower reaction times than boys, leading to;
2) girls actually maybe having slower reaction times.

This research hopefully will give a better understanding of the difference between girls’ and boys’ reaction times, in relation both to sight and sound. Our specific experiment will test the speed of which year 8 girls and boys at John Curtin College of the Arts react to:

1) the image of a cat that will pop up on a computer screen (we chose a cat because everyone is familiar with them,and so no one will have an advantage over others);
2) the sound of a cat meowing on a computer (again, we chose a cat because everyone is familiar with this sound).

This survey has been done first hand, which means that we have collected the data ourselves. Unlike secondary data, I am confident that the data is not fraudulent in any way, and so is a reliable source of information.

A small group of 10 year 8students from the JC population were surveyed by us.It was unfeasible to do the whole population, because not all would want to, and it would be extremely time consuming to survey everyone. Also, it would be unnecessary to survey everyone because you would get the same result if you surveyed a sample of the population, as long as the sample you selected isn’t a prejudiced sample. You do this by randomly picking without knowing who you are selecting, like pulling names out of a hat. We were not able to do this, and so picked volunteers from our class. Our data will therefore not tell us the exact average reaction times for the year 8 population, because it is possible that every other year 8 in the school has a reaction time way faster or slower than the few we have chosen, but this is unlikely.

Iexpect that the boys will probably have a faster reaction time than girls for both sight and sound. However, that won't necessarily be because females always have a slower reaction time to males, but instead is likely to be because girls are brought up to be not as focused on physical activities like sport as boys.

The tablesand graphs below show the reaction-time data that we collected in our survey for boys and girls in relation to sight and sound.

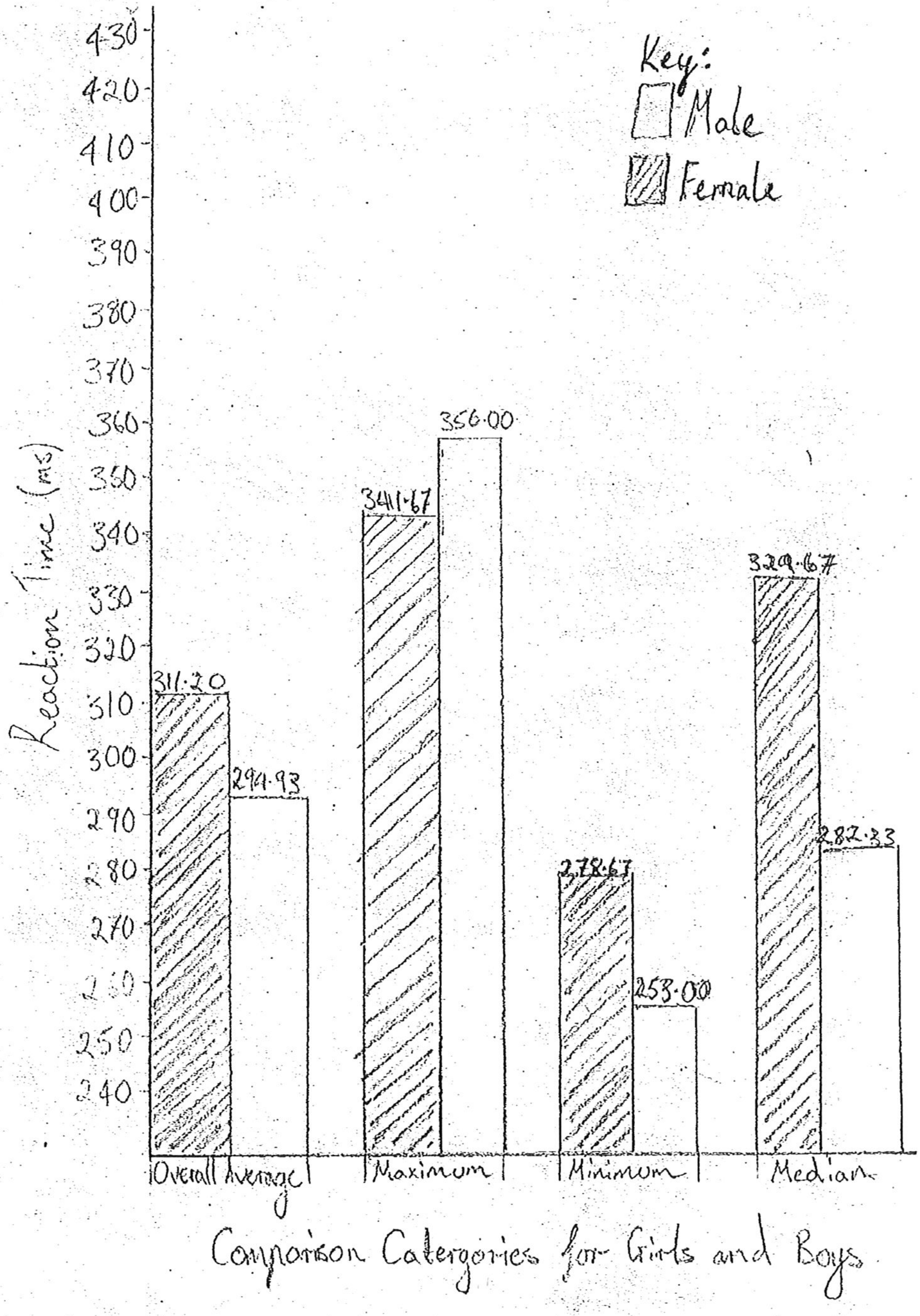
Table 1: Reaction time for sight(milliseconds)

Subject Male	Trial 1	Trial 2	Trial 3	Average
1	314	275	258	282.33
2	267	233	259	253.00
3	253	233	321	269.00
4	285	351	307	314.33
5	372	315	381	356.00
		Male overall average		294.93
		Male average statistics		
		Median		282.33
		Mode		n/a
		Range		103.00
		Maximum		356.00
		Minimum		253.00
		Single best effort		233
Subject Female	**Trial 1**	**Trial 2**	**Trial 3**	**Average**
1	255	277	290	274.00
2	369	295	347	337.00
3	264	257	300	273.67
4	266	473	286	341.67
5	401	297	291	329.67
		Female overall average		311.20
		Female average statistics		
		Median		329.67
		Mode		n/a
		Range		68.00
		Maximum		341.67
		Minimum		273.67
		Single best effort		255

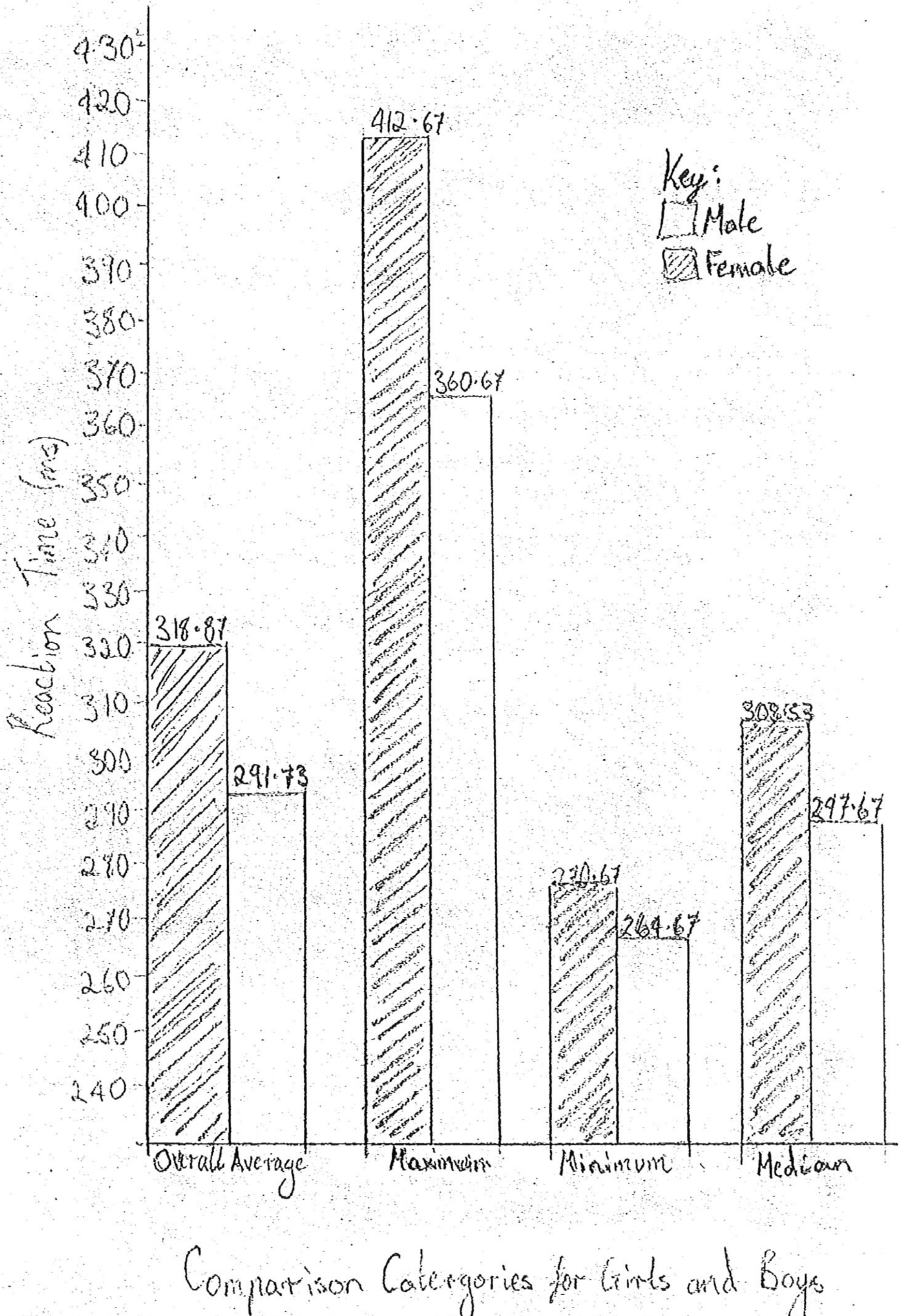
Table 2: Reaction time for sound(milliseconds)

Subject Male	**Trial 1**	**Trial 2**	**Trial 3**	**Average**
1	279	253	301	277.67
2	240	262	319	273.67
3	413	402	267	360.67
4	279	243	272	264.67
5	240	205	401	282.00
		Male overall average		291.73
		Male average statistics		
		Median		277.67
		Mode		n/a
		Range		96.00
		Maximum		360.67
		Minimum		264.67
		Single best effort		205
Subject Female	**Trial 1**	**Trial 2**	**Trial 3**	**Average**
1	277	290	671	412.67
2	299	244	316	286.33
3	297	354	259	303.33
4	390	291	283	321.33
5	360	209	243	270.67
		Female overall average		318.87
		Female average statistics		
		Median		303.33
		Mode		n/a
		Range		142.00
		Maximum		412.67
		Minimum		270.67
		Single best effort		209

Graph 1 : Yr 8 Girls and Boys Reaction to sight



Graph 2: Yr 8 Girls and Boys Reaction to Sound.



Analysis of SIGHT data

The overall average for the data collected on sight reaction time shows that boys have a faster reaction time than girls. This is a similar finding as for the sound reaction time. However, the girls had a lower maximum and a higher minimum than the boys, showing that while the girls did not get as quick a reaction time as boys, they were more consistent with their reactions. This can be seen by their range too, which is much smaller than the boys. The range for the girls was only 68ms when the boys had one of 103ms. But then again, the median for girls is 47ms slower than boys, a big difference in speed of reaction, and this is consistent with the faster mean values.

In all data collecting of reaction times, it is often unlikely that you will need to use the mode, because there is very little chance that you will have a reaction time exactly the same as the last one unless you are rounding to the 100th millisecond or something like that. So in this case, the mode for all categories is not a very helpful measure of central tendency, and in most cases was not possible to calculate. This is particularly the case here, because of the small sample we collected data from. The single best effort for boys was 23ms quicker than the girls' best effort, showing again a consistency of boys being faster. Having said that, while faster, this is not a very big difference, and so it doesn't suggest that a girl could not be as fast as a boy, no matter what.

Analysis of SOUND data

The overall averagefor the data collected on sound reaction time definitely shows that boys have a faster reaction time than girls, as was the case for sight. The maximum and minimum averages also correspond to this, as the girls have slower average times for both as well. This shows that for the sound test, unlike the sight test, boys had a much smaller range than girls. This could mean that girls react much slower to sound than they do to sight, which doesn't really seem likely, or it could mean that there is an outlier in the data causing the difference.One statistic supporting the possibility of an outlier is that the maximum for girls is surprisingly large and not correspondent to the other numbers. When I looked into this, it turns out that in one of the trials a girl did, her reaction time was untrue to her actual capacity. Her time was 671ms when her other two times were in the 200's. This shows that if her time had been like her others then she would have had an average of roughly 289ms and would have made the maximum 321ms, a faster maximum than the boys. But it is not right to change a reaction time, because if you did that you would also have to change the boys' results, because we don't know if some of theirs are "untrue" as well. This would then muddle up the data, which could make it a biased and unfair test. Having said that, the median result for the girls was also slower than the boys, and it is not influenced by the outlier like the mean is. The single best effort scores for sound are really interesting, because like in the sight data, there is not a big difference between the boys' and girls' scores. In fact, they are nearly exactly the same, with the boys only being 4 milliseconds faster than the girls, which is actually roughly the same. Even more than in the sight data, this suggests that a girl could be as fast as a boy, even if they often aren't as fast.

Conclusion

The results of the survey show that boys definitely have faster reaction times than girls, and this was true for both sight and sound. However the results were complicated because not all the data suggested that boys' reaction times are always faster than girls' reaction times. This was particularly the case when I looked at the range and single best effort for boys and girls. In the sight data, the range showed that girls' reaction times were much more consistent than the boys, and in the sound data, there was virtually no difference between the single best effort for boys and girls. This shows that girls do have the capacity to have an equal time to boys, and can get low reaction times, depending on the circumstances.

Although the results show that boys have faster reaction times, there were some limitations in the experiment that might have influenced the reliability of the findings:

1. The sample size was small – Having a small sample size may have affected the data, but we did have three trials for each kid to help compensate for this;
2. The sample was not random – Having a sample that is not randomly picked may have affected the data, but we did not try to pick particular kids;
3. All the kids were from JC – It could be that JC students are different from other kids, but this is unlike;
4. We knew the kids that we selected – Because of this, the kids might have not behaved naturally, but they seemed to take it seriously and we encouraged them to do their best;
5. We used cat images and sounds – It could be that the girls reacted more quickly because cute cat images and sounds are the sorts of things girls are encouraged to like. Even if this were true, this would probably only have made the differences smaller between boys and girls, not larger.

It is fair to say that boys do tend to have faster reaction times when it comes to physical activities like sport, and the findings from our study support this. However, the findings also show that girls have just as much capacity for low reaction times as boys, and may also be more consistent in their reaction times than boys. These findings support what we know already about boys and girls. Boys are encouraged to focus their lives around sport and being fit and 'getting abs'. They have lots of opportunities to be physical and to develop their physical side, while girls are encouraged to be quiet and soft and sweet.

Research on babies shows that even from an age of 18 months, babies will associate girls with dolls and boys with trucks and cars. It also shows that if an adult thinks a baby is a girlthey will act sweet and cuddly towards it, but if that same baby is wearing blue the adult will roughhouse it and be all tough with it. Professional sport is dominated by men too, and they are paid much more than women, which encourages boys to do it more than girls. Men are also encouraged to be competitive and strive to prove themselves to be the bestat the things they do. Recent research by Christine Christian states that 96% of Australian CEOs are still male, which she thinks is pitiful in today's society.

I also know from personal experience the difference between the way boys and girls are treated,because I have long hair and tie it back "like a girl". People often mistake me for a girl and act completely differently towards me than people who know I'm a boy, and then when they find out I'm a boy they sometimes even find it confusing or weird or don't understand why I don't do just what boys are meant to do.At the end of the day, I have learnt that we are all born pretty much the same, and most of the differences between us are more to do with the opportunities we are given, not the way we are. It is like saying that at the Olympics, Australians do well at swimming because they were born to swim, and the Swiss do well at skiing because they were born to ski.

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